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CARR & FERRELL LLP 2200 GENG ROAD PALO ALTO, CA 94303			SELLERS, DANIEL R	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/613,224	WATTS, LLOYD	
	Examiner	Art Unit	
	Daniel R. Sellers	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 March 2007.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5, 7-20 and 22-25 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-5, 7-20, and 22-25 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 08 December 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 and 12 have been considered but are moot in view of the new ground(s) of rejection.
2. Applicant's arguments filed 3/16/07 have been fully considered but they are not persuasive. The rejections of claims 2-5, 7-11, 13-20, and 22-25 are maintained. The so-called priority Application No. 09/534,682 does not teach or suggest the subject matter in claims 2-5, 7-11, 13-20, and 22-25 for which applicant seeks patent protection. Applicant is advised to include the relationship between Application No. 09/534,682 and this application (e.g. Continuation-in-Part) in the first sentence(s) of the specification following the title or in an application data sheet.

Priority

3. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the

requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 09/534,682, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. Accordingly **claims 2-5, 7-11, 13-20, and 22-25 are not entitled to benefit of the prior application.**

4. This application repeats a substantial portion of prior Application No. 09/534,682, filed March 24, 2000, and adds and claims additional disclosure not presented in the prior application. Since this application names an inventor or inventors named in the prior application, it may constitute a continuation-in-part of the prior application. Should applicant desire to obtain the benefit of the filing date of the prior application, attention is directed to 35 U.S.C. 120 and 37 CFR 1.78.

5. If applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 120, a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications.

If the instant application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If

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the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference

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was submitted in an oath or declaration or the application transmittal letter), and the information concerning the benefit claim was recognized by the Office as shown by its inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge under 37 CFR 1.17(t) are not required. Applicant is still required to submit the reference in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the specification or an ADS. See MPEP § 201.11.

Specification

6. The disclosure is objected to because of the following informalities: The relationship between Application No. 09/534,682, 10/074,991, and/or this application is not disclosed in the specification (see 37 CFR 1.78(a)(2)(iii)).

Appropriate correction is required.

Double Patenting

7. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

8. **Claims 7 and 20** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 21 of copending

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Application No. 10/074,991 in view of Williamson et al. (USPN 5,027,410) (hereinafter Williamson).

9. Regarding **claim 7**, see claim 21 of Application No. 10/074,991. The copending application seeks protection for the same subject matter except for one limitation. The copending application does not claim downsampling the output of the last low pass filter. Williamson teaches this feature, wherein halving the sampling rate halves the filtered output data rate (abstract). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Application '991 and Williamson for the purpose of reducing the computation time required.

10. Regarding **claim 20**, see the preceding argument with respect to claim 7. The combination teaches these features.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 102

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. **Claims 1 and 12** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Williamson.

13. Regarding **claim 1**, Williamson teaches a method of analyzing an input signal into a plurality of frequency components (Col. 4, lines 16-55).

Specifically regarding **claim 1**, Williamson teaches:

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processing the signal with a first set of low pass filters (Fig. 9) to derive a first set of frequency components wherein the first set of low pass filters are arranged serially in a chain (173 and 175) having a first low pass filter (173) and a last low pass filter (175), the output of each low pass filter being fed to the next low pass filter in the chain until the last low pass filter (175);

downsampling the output of the last low pass filter to produce a downsampled signal (Col. 10, lines 1-8, where n = 1, and sampling rate is $\frac{1}{2}^2 = \frac{1}{4}$ the original input rate); and

processing the downsampled signal with a second set of low pass filters (177 and 179) to derive a second set of frequency components.

14. Regarding **claim 12**, see the preceding argument with respect to claim 1, Williamson teaches these features, wherein inherently the system performs a down-sampling or a decimating process between the filters in a chain (Col. 9, lines 16-21).

15. **Claims 3-5, 8-11, 14-16 and 22-25** are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Baumgarte (USPN 6,915,264).

16. Regarding **claim 3**, Baumgarte teaches the features of claim 1.

Baumgarte teaches a method of analyzing an input signal into a plurality of frequency components (Col. 2, lines 46-57 and Fig. 1-3) comprising:

processing the signal with a first set of low pass filters (Fig. 2, unit 21-1 with filters 23-1 to 23-q) to derive a first set of frequency components wherein the first set of low pass filters are arranged serially in a chain having a first low pass filter (filter 23-1) and a last low pass filter (filter 23-q), the output of each low pass filter being fed to the next low pass filter in the chain until the last low pass filter (Col. 4, line 61 - Col. 5, line 25 and Fig. 1-2);

downsampling the output of the last low pass filter to produce a downsampled signal (Col. 5, lines 14-25 and Fig. 2, units 22-1 and 22-2);

processing the downsampled signal with a second set of low pass filters to derive a second set of frequency components (Fig. 2, unit 21-2).

Specifically regarding **claim 3**, the further limitation of claim 1, Baumgartee teaches a filter bank with downsampling means between cascaded low pass filters. Baumgartee also teaches that similar filters in different stages have a different Q, or quality factor (Col. 7, lines 13-65 and Eq. 1-2).

17. Regarding **claim 4**, the further limitation of claim 1, see the preceding argument with respect to claim 3. Baumgartee teaches a second set of low pass filters that have a Q that is less sharp than the first set of low pass filters (Col. 7, lines 13-19).

18. Regarding **claim 5**, the further limitation of claim 1, Baumgartee teaches a second set of low pass filters having a Q that differs from the Q of the first set of low pass filters substantially according to the human critical bandwidth (Col. 7, lines 13- 36).

19. Regarding **claim 8**, Baumgartee teaches a first filter (Fig. 2, filter 23-1) to separate part of the signal into a first output and a second filter (filter 23-2), wherein the first channel inherently emphasizes a higher frequency than the first (see figure 2). The second set stage or set of filters has a different Q than the first (Col. 7, lines 13-65 and Eq. 1-2).

20. Regarding **claim 9**, the further limitation of claim 8, see the preceding argument with respect to claim 4. Baumgartee teaches this feature.

21. Regarding **claim 10**, the further limitation of claim 8, see the preceding argument with respect to claim 5. Baumgartee teaches this feature.

22. Regarding **claim 11**, Baumgarte further discloses the filter cascades are low pass filters (Col. 4, lines 44-60).

23. Regarding **claim 14**, the further limitation of claim 12, see the preceding argument with respect to claim 4. Baumgarte teaches the features of claim 12, wherein a cochlear filter bank structure, which comprises of a series of filter bank sections with downsamplers in between (Col. 5, lines 14-25). Figure 2 comprises of a stage 1 consisting of a series of filters (23-1...23-q) wherein the output of the last filter 23-q is then processed by downampler 22-1. The downsampled signal is processed by stage 2 by a second set of filters. Baumgarte further discloses the filter cascades are of low pass filters (Col. 4, lines 44-60). Baumgarte, further, teaches a second set of low pass filters that have a Q that is less sharp than the first set of low pass filters (Col. 7, lines 13-19).

24. Regarding **claim 15**, the further limitation of claim 12, see the preceding argument with respect to claim 4. Baumgarte teaches these features.

25. Regarding **claim 16**, the further limitation of claim 12, see the preceding argument with respect to claim 5. Baumgarte teaches these features.

26. Regarding **claim 22**, Baumgarte discloses a first filter (Fig. 2, filter 23-1) to separate part of the signal into a first output and a second filter (filter 23-2), wherein the first channel inherently emphasizes a higher frequency than the first (see figure 2). The second set stage or set of filters has a different Q than the first (Col. 7, lines 13-65 and Eq. 1-2).

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27. Regarding **claim 23**, the further limitation of claim 22, see the preceding argument with respect to claim 4. Baumgarte teaches these features.

28. Regarding **claim 24**, the further limitation of claim 22, see the preceding argument with respect to claim 5. Baumgarte teaches these features.

29. Regarding **claim 25**, the further limitation of claim 22, Baumgarte further discloses the filter cascades are of low pass filters (Col. 4, lines 44-60).

30. **Claims 7 and 20** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Carlson et al., USPN 4,674,125.

Carlson teaches a method of analyzing an input signal into a plurality of frequency components (Col. 6, lines 16-29).

Specifically regarding **claim 7**, Carlson teaches:

processing the input signal with a first low pass filter to produce a first low pass filtered signal (Fig. 1, unit 100-1, Fig. 1b, unit 100_{b-k}, 102, signals G_{k-1}, and G_k);

subtracting the first low pass filtered signal from the input signal to derive a first frequency component (Fig. 1b, 110, G_k, G_{k-1}, and L_{k-1});

processing the low pass filtered signal with a second low pass filter to produce a second low pass filtered signal (Fig. 1, unit 100-2, signal G₁, Fig. 1b, unit 100_{b-k}, and signal G_k);

subtracting the second low pass filtered signal from the first low pass filtered signal to derive a second frequency component (Fig. 1b, unit 110, 100_{b-k}, 102, signals G_{k-1}, G_k, L_{k-1}, and Fig. 1, signal L₁); and

downsampling an output of a last low pass filter to produce a downsampled signal (Col. 11, lines 10-18 and Fig. 1b, unit 104).

Specifically regarding **claim 7**, Carlson teaches a second low pass filter connected to the output of the first low pass filter, and therefore the separation of an input signal into two different frequency components is accomplished. Furthermore, Carlson teaches that a downampler (fig. 1b, unit 104) is configured to downsample an output of the last low pass filter to produce a downsampled signal (Col. 11, lines 10-18).

31. Regarding **claim 20**, see the preceding argument with respect to claim 7. Carlson teaches a system for separating the input signals into a plurality of frequency components, wherein the first and second low pass filters are comprised of digital convolution filters and the first and second processors are digital subtractors (Fig. 1, 1b, Col. 6, lines 38-40, and Col. 13, line 54 - Col. 14, line 35). Carlson teaches that a downampler (Fig. 1b, unit 104) is configured to downsample an output of the last low pass filter to produce a downsampled signal (Col. 11, lines 10-18).

Claim Rejections - 35 USC § 103

32. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

33. **Claims 2 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Baumgarte as applied to claim 1 above, and further in view of Carlson.

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34. Regarding **claim 2**, the further limitation of claim 1, Baumgarte teaches the method of claim 1. However, Baumgarte does not teach a low pass filter, which is derived by subtracting the output of a low pass filter from the input of the low pass filter.

35. Carlson teaches a low pass filter with subtraction means as claimed (Col. 12, lines 5-47, Col. 13, line 54 - Col. 14, line 30, Col. 15, line 62 - Col. 16, line 35, and Fig. 1-3). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Baumgarte and Carlson for the purpose of reducing the number of filters needed to implement the system.

36. Regarding **claim 13**, the further limitation of claim 12, see the preceding argument with respect to claim 2. The combination teaches these features.

37. **Claims 17-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Baumgarte as applied to claim 12 above, and further in view of well-known prior art.

38. Regarding **claim 17**, the further limitation of claim 12, Baumgarte teaches a system for use in the field of perceptual audio coding (Col. 1, lines 8-30). The Office takes *Official Notice*, wherein it is well known that voice recognition systems employ perceptual audio coding. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Baumgarte and well-known prior art for the purpose of using only the perceived qualities of the audio signal for voice recognition.

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39. Regarding **claim 18**, the further limitation of claim 12, see the preceding argument with respect to claim 17. It would have been obvious for the purpose of separating an audio stream using only the perceived qualities of the audio signal.

40. Regarding **claim 19**, the further limitation of claim 12, see the preceding argument with respect to claim 17. It would have been obvious for the purpose of localizing sound using only the perceived qualities of the audio signal.

Conclusion

41. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Anderson, USPN 4,718,104, teaches filter-subtract-decimate decomposition technique to analyze signals (Abstract and Fig. 2a);

Engel, (previously cited), teaches a filter bank for decomposing signals into different frequency channels (Col. 5, lines 3-28);

Nakatani et al., (previously cited), teaches a cascaded group of filters an a subtraction process to form bandpass filters (Fig. 5); and

Lovett, (previously cited) teaches creating bandpass filters using low pass filters and subtraction (Col. 7, lines 4-10).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel R. Sellers whose telephone number is 571-272-7528. The examiner can normally be reached on Monday to Friday, 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


SINH TRAN
SUPERVISORY PATENT EXAMINER

DRS